

# Using MPIProf for Performance Analysis

MPIProf is a lightweight, profile-based application performance analysis tool that works with many MPI implementations, including HPE MPT. The tool gathers statistics in a counting mode via PMPI, the MPI standard profiling interface.

MPIProf can report profiling information about:

- Collective and/or point-to-point MPI functions called by an application (time spent, number of calls, and message size)
- MPI and POSIX I/O statistics
- Memory used by processes on each node
- Call path information of MPI calls (requires the `-g` compiler option and the `-cpath mpiprof` option)

There are two ways you can use MPIProf:

- The `mpiprof` profiling tool on the command line:

```
mpiexec -n <N> mpiprof [-options] [-h|-help] a.out [args]
```

- MPIProf API routines

## mpiprof Usage Example

Because the command-line method does not require changing or recompiling your application, we recommend this method for general use. To run `mpiprof`, load the modulefiles for your compiler, MPI library, and the `mpiprof` tool, then run the command line. For example:

```
module load comp-intel/2015.3.187 mpi-hpe/mpt
module load /u/scicon/tools/modulefiles/mpiprof
mpiexec -n 128 mpiprof -o mpiprof.out a.out
```

Note: If the `-o` option is not included, the profiling results are written to the `mpiprof_stats.out` file, or the `<a.out>_mpiprof_stats.out` file if the executable name is known.

For more details about using this tool, see the MPIProf user guide in the `/u/scicon/tools/` directory on Pleiades:

`/u/scicon/tools/opt/mpiprof/default/doc/mpiprof_userguide.pdf`

*MPIProf was developed by NAS staff member Henry Jin.*

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